Remarks/Arguments

The Office Action mailed June 5, 2008 has been reviewed and carefully considered.

Claims 15 and 16 have been amended. Claims 15-20 are now pending in this application.

Reconsideration of the above-identified application, as herein amended and in view of the following remarks, is respectfully requested.

Amended claim 15 now refers to a method for arbitrarily selectable scaling of input video images represented by pixels or sub pixels arranged line by line and column by column to produce output video images that can be displayed, the output video images being represented by pixels or sub pixels arranged line by line and column by column, wherein the number of lines and columns in the output video images differ from the number of lines and columns of the input video images, and wherein support points in the input image defining groups of pixels from which the output pixel is selected or calculated are offset between two successive lines of the input image.

35 U.S.C. 102(b) Rejection of Claims 15 and 17-20

Claims 15 and 17-20 stand rejected under 35 U.S.C. 102(b) as anticipated by U.S. Patent No. 5,097,518 (Scott et al.).

Applicant has amended claim 15 to recite that the support points of two successive lines or columns of the input video image are distributed in such a way that the support points of one line or column of the input video image have an offset with respect to the other line or column of the input video image. This amendment is fully supported by the specification (see the first paragraph on page 5).

Scott et al. suggest using a fixed distribution pattern of groups of pixels, which distribution pattern averages out to the desired scaling ratio over the entire width and height of the image. In Scott et al., every line of the input video image is grouped into groups of pixels in exactly the same way, The applicants direct the examiner's attention to Figure 4A of Scott et al. in which the: pixels lying in the first three columns of the first line are used for determining the value of the first pixel in the first line of the output

image, and pixels lying in the first three columns of the second line are used for determining the value of the first pixel in the second line of the output image. Scott et al. absolutely fails to teach or suggest using an offset for the distribution of support points in two successive lines and the according distribution of pixels into groups as now recited in applicant's amended claims.

Offsetting the support points in two successive lines of the input video image, as claimed in amended claim 15, improves the reproduction of details of the input image in the output video image; which otherwise might be lost, such as vertical detail in the input image that has a "width" of two pixels and extends across a number of consecutive lines. Assuming a fixed distribution of columns from which a pixel , in each line is selected for outputting, this vertical detail could be lost if the group of columns containing that "two pixel width" detail also contains pixels having pixel values which are dominant over said detail's pixel value and would be preferred by the selection algorithm. In applicant's claimed invention, a group of pixels lying in one line does not comprise exclusively the same columns as a corresponding group of pixels in the successive line. This measure increases the probability that a pixel value that is less likely to be chosen in one line (because of neighboring preferred or "dominant" pixel values in the respective group of pixels) is more likely to be chosen in the next line (because in the next line's group of pixels that particular pixel value may be the "dominant" pixel value).

The following schematic drawing will help understanding of this principle:

W	W	G	W	B	B	...
W	W	G	W	B	B	...
W	W	G	W	B	B	...
W	W	G	W	B	B	...
W	W	G	W	B	B	...
...	...	...	...	...	...	...

The table shows a detail of an image having pixels arranged in lines and columns. W indicates a white pixel, G indicates a grey pixel, and B indicates a black pixel. It is assumed that a horizontal scaling into an output image having an odd scaling ratio is desired, and the scaling requires groups of two and three pixels to be distributed across

one line of the input image. It is further assumed that black pixels are preferred when selecting output pixels. The grey pixels vertically arranged above each other form a thin vertical grey line. The white pixels to the right of the grey vertical line arranged above each other form a thin vertical white line in between the thick black line to the right and the thin grey line to the left. Further, a thick white vertical line is present at the left border of the input image.

If the scaling method of Scott et al. is used, as depicted in FIG. 4A of that patent, the first three columns of the output image would look as follows:

W	W	G	W	B	B	...
W	W	G	W	B	B	...
W	W	G	W	B	B	...
W	W	G	W	B	B	...
W	W	G	W	B	B	...
...	...	...	...	...	...	...

G	B	B	...
G	B	B	...
G	B	B	...
G	B	B	...
G	B	B	...
...	...	...	...

Note: The respective groups of pixels from which the output pixel value is selected are surrounded by bold cell borders.

Using the inventive scaling method of the present application the output image would look as follows:

W	W	G	W	B	B	...
W	W	G	W	B	B	...
W	W	G	W	B	B	...
W	W	G	W	B	B	...
W	W	G	W	B	B	...
...	...	...	...	...	...	...

G	B	B	...
W	B	B	...
G	B	B	...
W	B	B	...
G	B	B	...
...	...	...	...

Note: The respective groups of pixels from which the output pixel value is selected are surrounded by bold cell borders.

The difference in the two output images results from the teaching the in the Scott et al. patent of always making use of the first three pixels of each line of the input image for determining the respective first pixel of each line of the output image. In contrast, the method of the present principles makes uses of offset support points for two successive lines. The offset support points result in the groups of two successive lines being formed from pixels at least partly being located in different columns. As a result, the bold white vertical line at the left border is completely removed by the method of Scott et al., while the method of the present application preserves some detail of the bold white vertical line in every other line of the output image.

The alleged offset disclosed in Scott et al. is a mere result of the distribution scheme, which produces output values selected from groups of two or three pixels. However, this distribution scheme is the same for each line, and there is no offset in the distribution of the support points between two successive lines as recited in applicant's claims.

In summary, the Scott et al. patent does not teach all of the features of applicant's claim 15, especially the feature of:

> distributing the support points of two successive lines or columns of the input video image such that the support points of one line or column of the input image have an offset with respect to a preceding or succeeding line or column of the input video image, for improving reproduction of fine details in the output video image

Therefore, the Scott et al. patent does not anticipate claim 15, and claims 17, 18, 19 and 20 that depend therefrom. Applicant's request withdrawal of the 35 U.S.C. 102(e) of these claims.

35 U.S.C. § 103 Rejection of Claim 16

Claim 16 stands rejected under 35 U.S.C. 103(a) as obvious over U.S. Patent 5,097,518 (Scott et al.) in view of U.S. Published Patent Application No. 2003/0185451 (Jung).

Claim 16 has been amended in order to more clearly point out the origin and destination of the pixels that have a maximum distance to each other. As amended, claim 16 patentably distinguishes over the combination of Scott et al. and Jung.

As discussed previously, Scott et al. suggest using a fixed distribution pattern of groups of pixels, which distribution pattern averages out to the desired scaling ratio over the entire width and height of the image. Scott et al. does not distribute the support points of two successive lines or columns of the input video image such that the support points of one line or column of the input image have an offset with respect to a preceding or succeeding line or column of the input video image,

The Jung published application relates to processing digital images comprising pixel blocks, in which digital images undesired blocking artifacts may be visible at block boundaries, and determining whether the block boundaries are visible or not visible, in order to make a decision for subsequent filtering (see abstract; paragraph 0013). Paragraph 0033 of Jung pertains to the decision threshold whether a border between two neighboring blocks is visible, and does not deal with selecting pixels based upon a maximum difference. In fact, Jung's intention is to remove the undesired blocking artifacts rather than enhancing the visibility of differences.

Jung absolutely fails to disclose selecting pixels in an input video image in such a way that two of the selected pixels that are adjacent in an output image have a maximum difference. Moreover, the person of ordinary skill in the art would find no motivation in Jung to select pixels in such a way that they have a maximum difference, or to combine Jung and Scott.

Both Scott et al. and Jung, taken alone or in combination, fail to disclose each and every limitation of claim 16. Also, the combination of Jung and Scott does not suggest selecting the pixels in such a way that they have a maximum difference. In view of the foregoing discussion claim 16, which also is properly depending from allowable claim 15, is not obvious over Scott et al. in view of Jung and is allowable.

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Conclusion

In view of the foregoing amendments to the claims and the accompany remarks, applicants solicit entry of this amendment and allowance of the claims. If, however, the Examiner believes such action cannot be taken, the Examiner is invited to contact the applicant's attorney at (609) 734-6820, so that a mutually convenient date and time for a telephonic interview may be scheduled.

It is believed that no fee is due with regard to the filing of this revised response; however, if there is a fee due, please charge the amount due, to Deposit Account No. **07-0832.**

Respectfully submitted,
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